



**LOWER COOK INLET SOCKEYE AND CHUM SALMON AGE, WEIGHT,
AND LENGTH STATISTICS, 1970-1983**

By:
Thomas R. Schroeder

August 1984

ADF&G TECHNICAL DATA REPORTS

This series of reports is designed to facilitate prompt reporting of data from studies conducted by the Alaska Department of Fish and Game, especially studies which may be of direct and immediate interest to scientists of other agencies.

The primary purpose of these reports is presentation of data. Description of programs and data collection methods is included only to the extent required for interpretation of the data. Analysis is generally limited to that necessary for clarification of data collection methods and interpretation of the basic data. No attempt is made in these reports to present analysis of the data relative to its ultimate or intended use.

Data presented in these reports is intended to be final, however, some revisions may occasionally be necessary. Minor revisions will be made via errata sheets. Major revisions will be made in the form of revised reports.

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AGE, WEIGHT, AND LENGTH STATISTICS, 1970 - 1983

By

Thomas R. Schroeder

Alaska Department of Fish and Game
Division of Commercial Fisheries
Homer, Alaska 99603

August 1984

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FOREWORD

This data report is the first containing catch and escapement sampling data for the Lower Cook Inlet area. The objective of the report is to present a compilation of all available age, weight, and length sampling data for sock-eye and chum salmon stocks in the Lower Cook Inlet management area for easier reference and comparison in the future. Sampling prior to 1983 was on a time-available basis, but 1983 marked the first major sampling effort in this area.

ABSTRACT

Brief historical summaries of age, weight, and length samples of chum salmon (*O. keta*) and sockeye salmon (*O. nerka*) from 1970 to 1982 and the first major sampling program conducted in the Lower Cook Inlet area in 1983 are presented. Harvest figures are given for some areas and have been prorated to the age classes indicated by the samples. Sampling generally confirmed the strong two-ocean sockeye salmon returns expected to all systems in 1983 and the large percentage of 5-year-old chum salmon occurring in many Lower Cook Inlet returns.

KEY WORDS: Sockeye salmon, chum salmon, *Oncorhynchus*, biological sampling, age, weight, and length.

INTRODUCTION

The Lower Cook Inlet management area is divided into five management districts (Figure 1). All, except the Barren Islands District, are salmon management districts, which are further divided into 25 subdistricts or sections for more precise management of discrete stocks of salmon (Figures 2-6). Many of these subdistricts and sections contain stocks of sockeye (*Oncorhynchus nerka*) and chum (*O. keta*) salmon, while others are primarily pink salmon (*O. gorbuscha*) producing systems. Harvests of sockeye and chum salmon, while averaging under 20% of the total harvest for the area for the past 30 years, have increased in recent years to where these two species are accounting for over 60% of the total ex-vessel value of salmon to Lower Cook Inlet fishermen.

Very little effort had been expended on sampling these two species in the past because of their relatively insignificant numbers when compared to other areas of the state. Catch and escapement sampling was very sporadic and only occurred when people were available or when data were collected for enhancement or rehabilitation projects, such as proposed hatcheries, lake stocking, and lake fertilization.

The first major salmon age, weight, and length (AWL) sampling effort for Lower Cook Inlet was conducted during the summer of 1983 through the use of a student assistantship program with Amherst College. The sampling schedule designed was extremely ambitious and it was quite evident from the start that because of logistics and limited personnel involved that adjustments would have to be made. The sampling objectives were separated into three categories: (1) determine age classes by species for the various spawning systems, (2) determine whether there were age class differences between various portions of a return, and (3) monitor and determine interception rates of sockeye salmon bound for China Poot Bay in the Southern District seine and set net fisheries in Tutka Bay. The resulting data were then to be compared with samples taken prior to 1983.

METHODS

The stocks of sockeye and chum salmon to be sampled in Lower Cook Inlet were located in 19 different systems spread throughout a 386 km (240 mi) area from McNeil River in the west to Seward in the east (Figures 2-6).

These stocks were comprised of eight sockeye salmon stocks located at Aialik Bay, Delight and Desire Lakes, English Bay Lakes System, China Poot Bay (Leisure Lake), Kamishak-Douglas Rivers, Mikfik Lake, and Chenik Lake and eleven chum salmon stocks located at Tonsina Creek, Island Creek, Dogfish Lagoon, Tutka Bay, Silver Beach, Kamishak River, McNeil River, Bruin Bay, Ursus Cove, Cottonwood and Iniskin Bays.

Due to the logistic difficulties involved, a large portion of the desired sampling was eliminated. Logistics often required the sampler to make extended trips on board a tender or to travel and remain overnight in Seward, which restricted sampling more than one stock or species at a time.

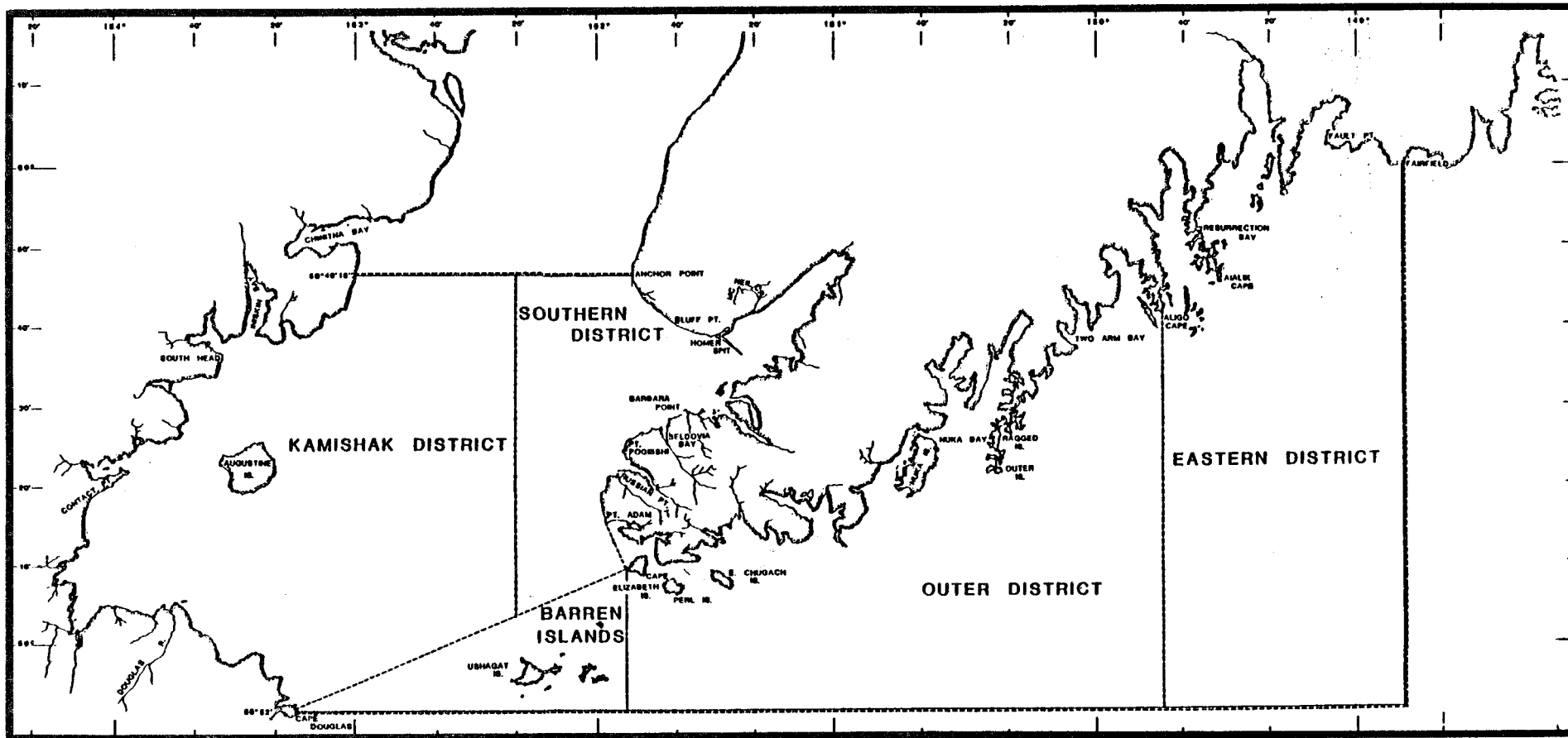


Figure 1. Lower Cook Inlet Management Area.

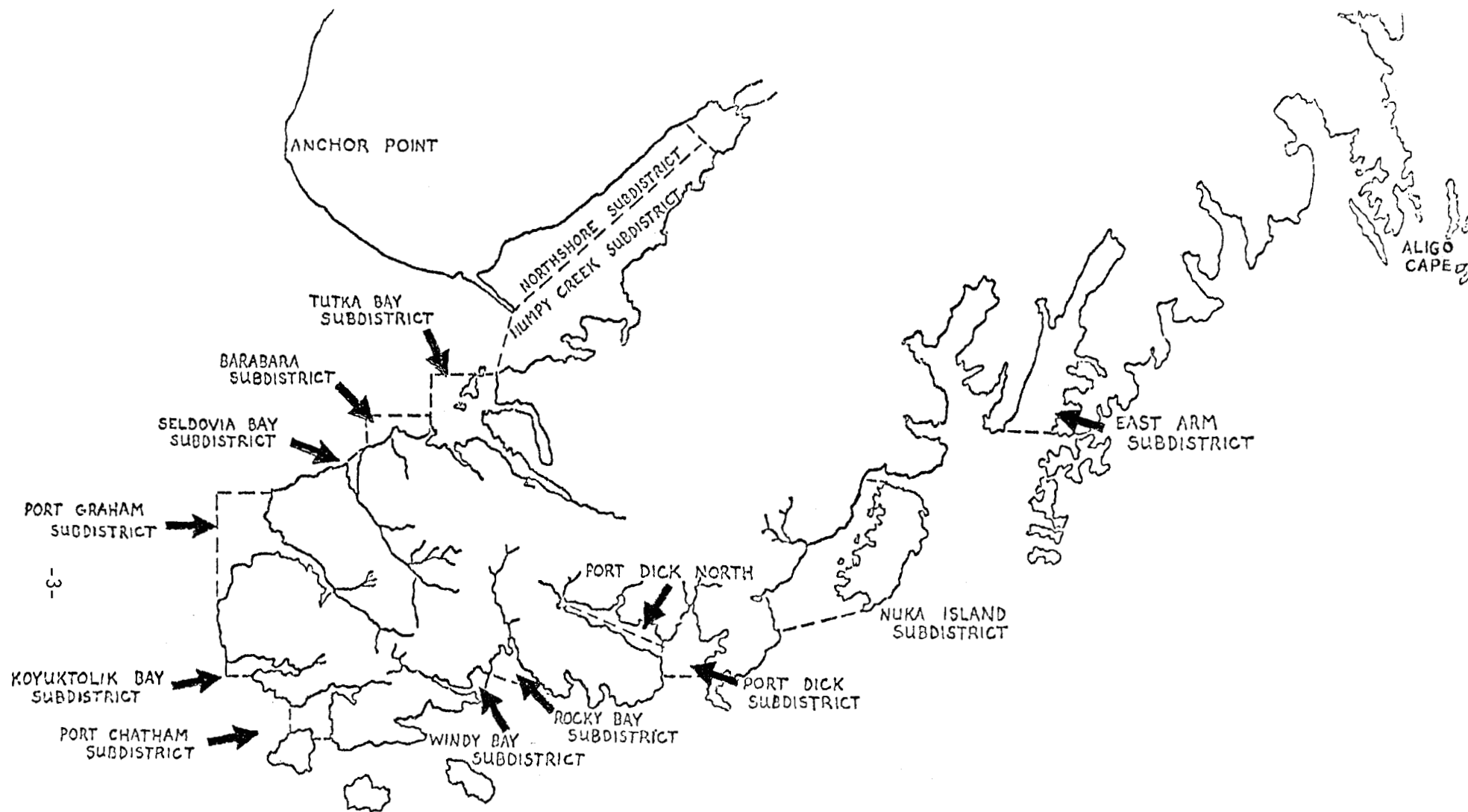


Figure 2. Salmon fishing subdistricts in the Southern and Outer Districts of Cook Inlet.



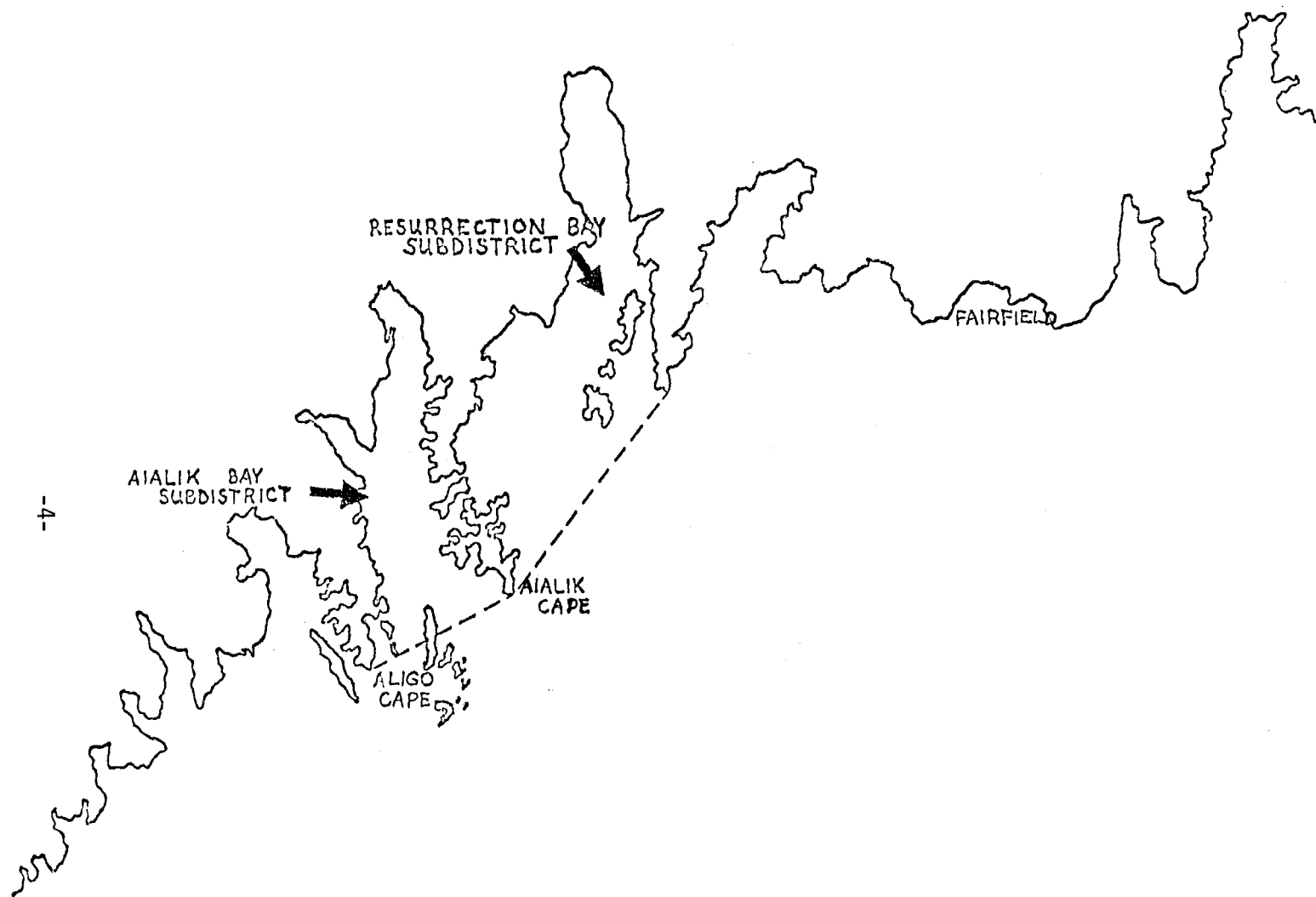


Figure 3. Salmon fishing subdistricts in the Eastern District of Cook Inlet.

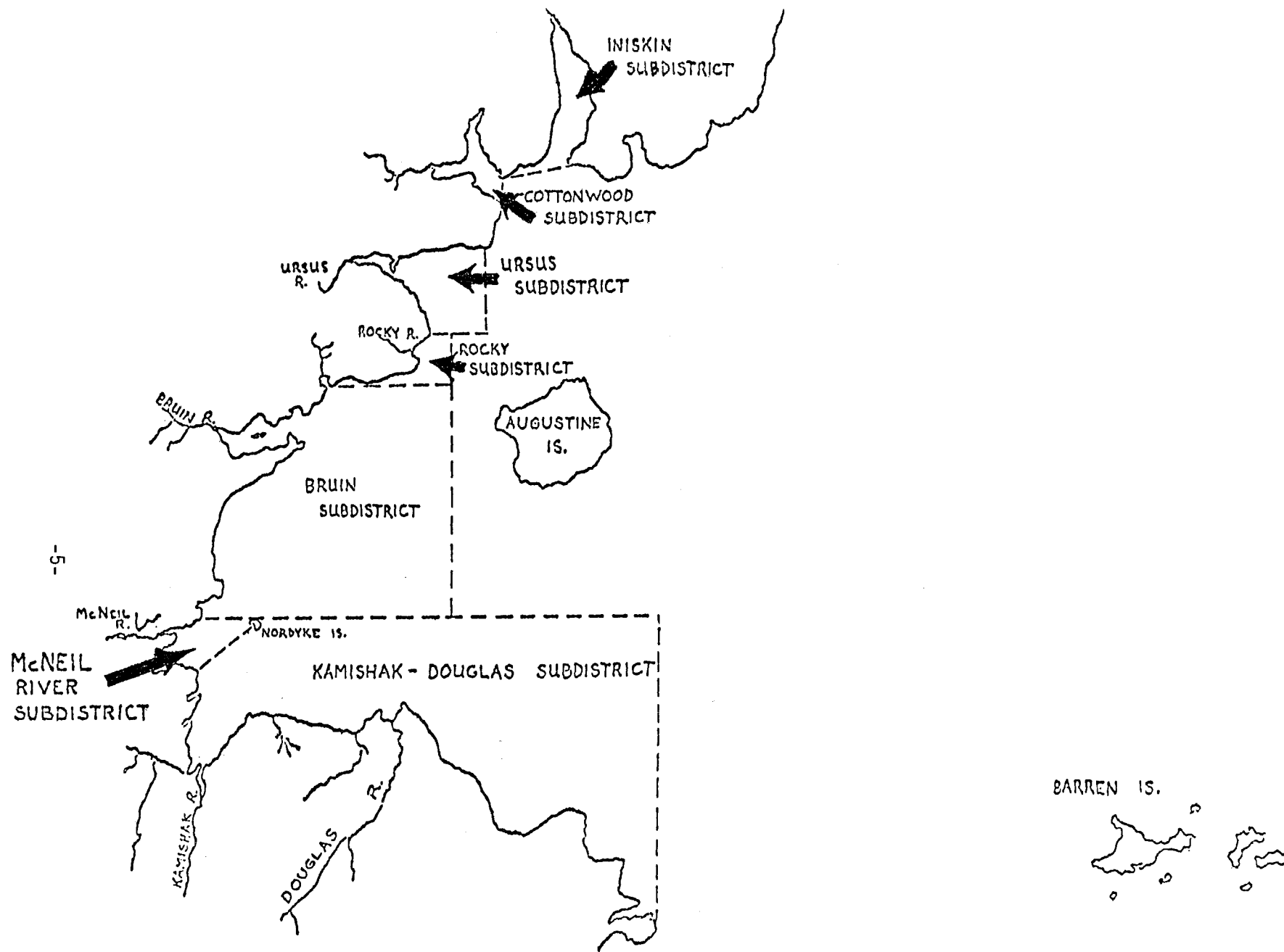


Figure 4. Salmon fishing subdistricts in the Kamishak Bay districts of Cook Inlet.

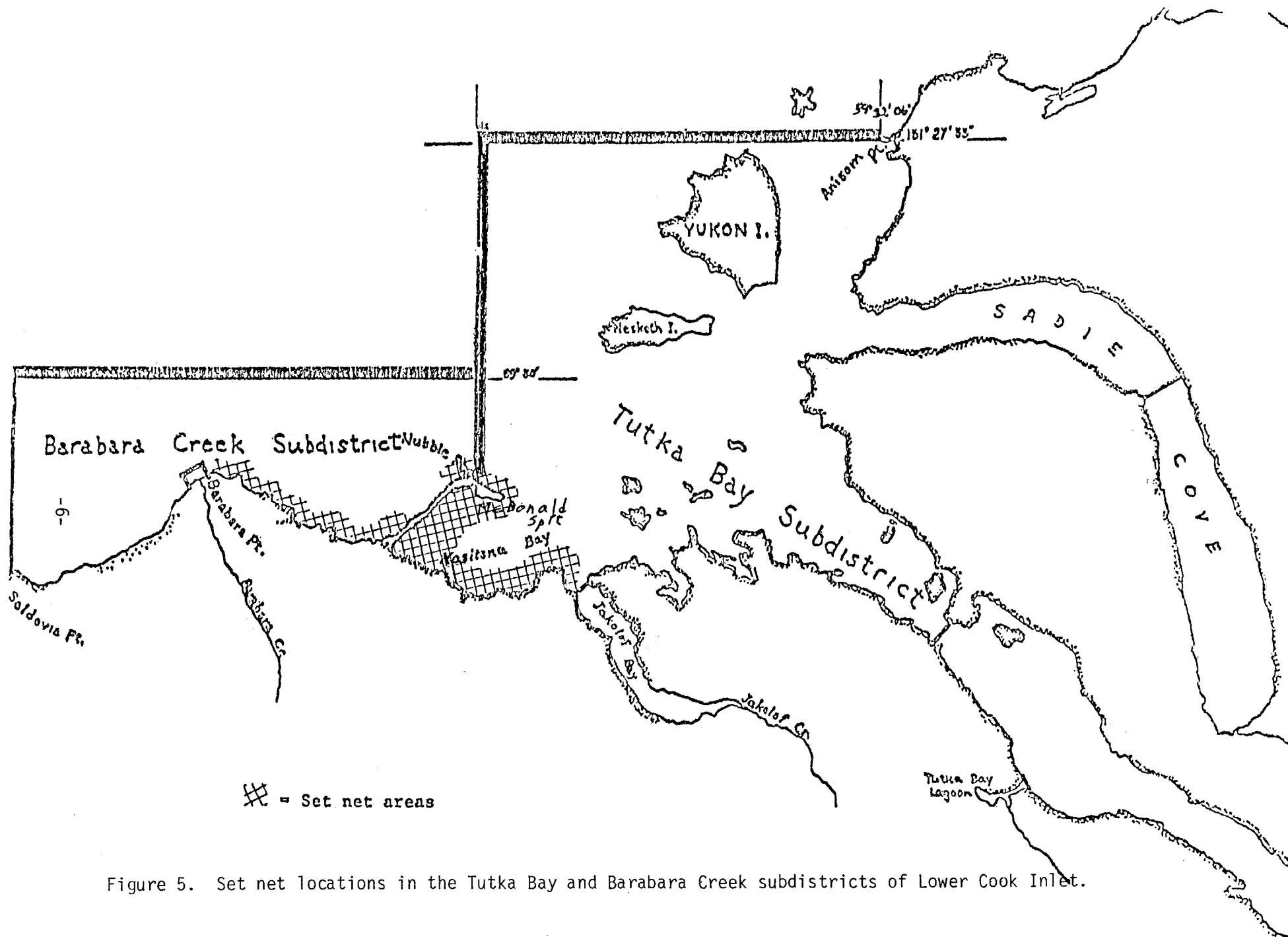


Figure 5. Set net locations in the Tutka Bay and Barabara Creek subdistricts of Lower Cook Inlet.

⊗ = Set net areas

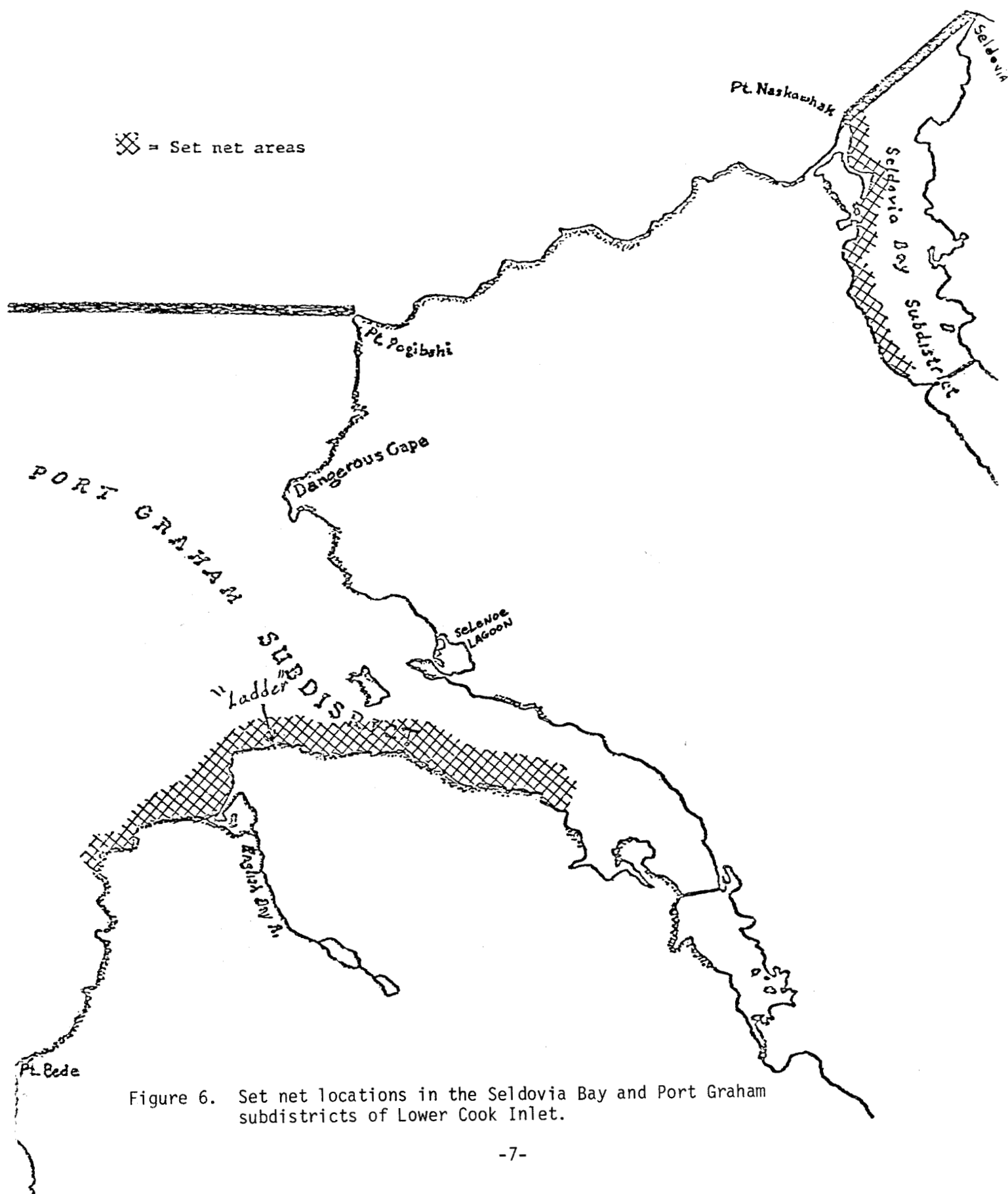


Figure 6. Set net locations in the Seldovia Bay and Port Graham subdistricts of Lower Cook Inlet.

Standard AWL sampling procedures were used as recommended by the Statewide Stock Separation Project (Sharr 1981). Fish were measured to the nearest millimeter (mm) from the middle of the eye to the fork of the tail and fish were weighted to the nearest 0.05 kilogram (kg). Sample numbers as recommended in a memo concerning statewide standards for AWL sample sizes were adhered to as much as was reasonably and physically possible (Bernard 1982).

Scales were read using the Gilbert and Rich age designations¹ and all samples were entered into files on a Vector Graphics computer. Data were analyzed by an AWL summary program (Yuen 1983). Weighted standard errors contained in the AWL program are referenced in Yuen, Bue, and Meacham (1981). The harvest figures listed for the various areas in 1983 are preliminary estimates based on processor catch reports and tender reports. Data prior to 1983 are final figures from fish ticket computer runs.

RESULTS AND DISCUSSION

Historical

Tables 1 through 20 present by spawning system all historical (prior to 1983) AWL data available for sockeye and chum salmon in the Lower Cook Inlet management area. The majority of the sampling conducted in the 1970's was connected with sockeye salmon in the Southern District, primarily from set net catches in the McDonald Spit area. Prior to the 1983 sampling program, the majority of the sockeye salmon sampled at the McDonald Spit area and the Southern District were three-ocean fish, age 5₂ and 6₃, with two ocean fish 4₂ and 5₃, making up the other major portion of the catches (Tables 1, 2, 3, 4, 5, and 6). Mikfik Lake sockeye age class composition varied considerably. Sampling in 1975 and 1976 (when very few samples were taken) suggested the major age classes to be two ocean, 4₂ and 5₃, with age 5₂, three-ocean fish, comprising only 22% of the return (Tables 7 and 8). Samples taken in 1980 and 1982 (Tables 9 and 10) suggested a major shift to the three-ocean age class 5₂ with two-ocean fish comprising less than 40 and 16%, respectively. These results must be viewed cautiously, however, since sample sizes were so small.

Catches from returns to Delight and Desire Lakes in 1973 and 1977 indicated the majority of these fish to be three ocean, 5₂, 6₃, and 7₄, adults (Tables 11 and 12). No samples were ever taken prior to 1983 from the other sockeye system in the Outer and Eastern Districts located in Aialik Bay.

A lake stocking program conducted by the FRED Division at Leisure Lake in the China Poot Bay area has begun to produce a very significant return of sockeye salmon. The returns in 1980 and 1981 consisted of 92-94% 4₂ (two-ocean) adults (Tables 13 and 14). Age class composition is expected to change with future increased stocking densities.

¹ Gilbert-Rich Formula - Total years of life at maturity (large type) - Year of life at outmigration from freshwater (subscript).

Table 1. McDonald Spit commercial catch of sockeye salmon by age and sex with length (mm), 1970.

ALL PERIODS COMBINED										
	AGE GROUP									
	41	42	52	53	62	63	64	73	74	TOTAL
MALES										
PERCENT	0.00	8.70	17.50	10.10	0.00	11.60	1.40	0.00	1.40	50.70
AV LENGTH	0.00	490.83	577.92	542.86	0.00	583.12	500.00	0.00	570.00	554.81
STD ERROR	0.00	7.79	9.06	6.80	0.00	9.91	0.00	0.00	0.00	4.29
SAMP SIZE	0	6	12	7	0	8	1	0	1	35
FEMALES										
PERCENT	1.40	2.90	20.50	5.80	1.40	14.50	1.40	1.40	0.00	49.30
AV LENGTH	541.00	525.00	547.86	528.75	565.00	549.50	540.00	560.00	0.00	545.16
STD ERROR	0.00	20.00	10.28	18.97	0.00	8.93	0.00	0.00	0.00	5.58
SAMP SIZE	1	2	14	4	1	10	1	1	0	34
SEXES COMBINED										
PERCENT	1.40	11.60	38.00	15.90	1.40	26.10	2.80	1.40	1.40	100.00
AV LENGTH	541.00	499.37	561.70	537.71	565.00	564.44	520.00	560.00	570.00	550.05
STD ERROR	0.00	7.69	6.94	8.14	0.00	6.63	0.00	0.00	0.00	3.51
SAMP SIZE	1	8	26	11	1	18	2	1	1	69

Table 2. McDonald Spit commercial catch of sockeye salmon by age and sex with length (mm), 1972.

ALL PERIODS COMBINED								
	AGE GROUP							
	42	52	53	62	63	64	73	TOTAL
MALES								
PERCENT	2.70	40.60	8.10	0.00	2.70	2.70	2.70	59.50
AV LENGTH	505.00	592.00	511.67	0.00	550.00	565.00	580.00	573.44
STD ERROR	0.00	8.57	23.51	0.00	0.00	0.00	0.00	6.67
SAMP SIZE	1	15	3	0	1	1	1	22
FEMALES								
PERCENT	5.40	24.30	0.00	2.70	8.10	0.00	0.00	40.50
AV LENGTH	510.00	575.00	0.00	555.00	578.33	0.00	0.00	565.67
STD ERROR	30.00	8.42	0.00	0.00	6.01	0.00	0.00	6.55
SAMP SIZE	2	9	0	1	3	0	0	15
SEXES COMBINED								
PERCENT	8.10	64.90	8.10	2.70	10.80	2.70	2.70	100.00
AV LENGTH	508.33	585.63	511.67	555.00	571.25	565.00	580.00	570.29
STD ERROR	20.00	6.22	23.51	0.00	4.51	0.00	0.00	4.77
SAMP SIZE	3	24	3	1	4	1	1	37

Table 3. Delight Lake sockeye salmon escapement samples by age, length (mm), and sex, 1973.

	42	AGE GROUP 52	TOTAL
MALES			
PERCENT	25.00	25.00	50.00
AV LENGTH	610.00	640.00	625.00
STD ERROR	0	0	15.00
SAMP SIZE	1	1	2
FEMALES			
PERCENT	0	50.00	50.00
AV LENGTH	0	585.00	585.00
STD ERROR	0	5.00	5.00
SAMP SIZE	0	2	2
SEXES COMBINED			
PERCENT	25.00	75.00	100.00
AV LENGTH	610.00	603.30	605.00
STD ERROR	0	18.56	13.23
SAMP SIZE	1	3	4

Table 4. Southern District commercial catch of sockeye salmon by age and sex with length (mm), 1973.

ALL PERIODS COMBINED						
	41	52	AGE GROUP 53	63	73	TOTAL
MALES						
PERCENT	.90	36.80	2.60	22.80	.90	64.00
AV LENGTH	645.00	609.88	548.33	612.73	620.00	609.03
STD ERROR	0.00	4.01	14.81	3.66	0.00	2.72
SAMP SIZE	1	42	3	26	1	73
FEMALES						
PERCENT	0.00	22.90	2.60	10.50	0.00	36.00
AV LENGTH	0.00	574.15	543.33	571.92	0.00	571.27
STD ERROR	0.00	4.11	18.56	4.36	0.00	3.20
SAMP SIZE	0	26	3	12	0	41
SEXES COMBINED						
PERCENT	.90	59.70	5.20	33.30	.90	100.00
AV LENGTH	645.00	596.17	545.83	599.86	620.00	595.44
STD ERROR	0.00	2.93	11.07	2.86	0.00	2.09
SAMP SIZE	1	68	6	38	1	114

Table 5. McDonald Spit commercial catch of sockeye salmon by age and length (mm), 1974.

ALL PERIODS COMBINED							
	42	52	AGE GROUP			74	TOTAL
			53	62	63		
MALES							
PERCENT	2.90	4.40	26.50	1.50	20.60	0.00	55.90
AV LENGTH	532.00	611.00	536.22	626.00	593.93	0.00	565.56
STD ERROR	64.00	13.75	5.77	0.00	8.95	0.00	5.56
SAMP SIZE	2	3	18	1	14	0	38
FEMALES							
PERCENT	1.50	10.30	20.50	1.50	8.80	1.50	44.10
AV LENGTH	518.00	570.43	534.21	545.00	580.67	580.00	553.31
STD ERROR	0.00	8.54	4.80	0.00	8.95	0.00	3.49
SAMP SIZE	1	7	14	1	6	1	30
SEXES COMBINED							
PERCENT	4.40	14.70	47.00	3.00	29.40	1.50	100.00
AV LENGTH	527.23	582.57	535.34	585.50	589.96	580.00	560.16
STD ERROR	42.67	7.26	3.87	0.00	6.82	0.00	3.47
SAMP SIZE	3	10	32	2	20	1	68

Table 6. Southern District commercial catch of sockeye salmon by age and sex with length (mm), 1975.

ALL PERIODS COMBINED						
	42	52	AGE GROUP 53	63	64	TOTAL
MALES						
PERCENT	5.70	10.00	14.30	0.00	2.90	32.90
AV LENGTH	537.75	587.14	540.70	0.00	539.50	554.20
STD ERROR	10.41	7.56	10.07	0.00	6.50	5.29
SAMP SIZE	4	7	10	0	2	23
FEMALES						
PERCENT	5.70	27.10	25.70	5.70	2.90	67.10
AV LENGTH	512.75	580.53	535.00	560.75	526.50	553.32
STD ERROR	10.61	4.14	3.11	9.41	.50	2.38
SAMP SIZE	4	19	18	4	2	47
SEXES COMBINED						
PERCENT	11.40	37.10	40.00	5.70	5.80	100.00
AV LENGTH	525.25	582.31	537.04	560.75	533.00	553.61
STD ERROR	7.43	3.64	4.11	9.41	3.26	2.36
SAMP SIZE	8	26	28	4	4	70

Table 7. Mikfik Lake sockeye salmon escapement samples¹ by age, length (mm), and sex, 1975.

	AGE GROUP			
	42	52	53	TOTAL
MALES				
PERCENT	55.56	11.11	11.11	77.78
AV LENGTH	502.60	545.00	503.00	508.70
STD ERROR	15.45	0	0	12.26
SAMP SIZE	5	1	1	7
FEMALES				
PERCENT	11.11	11.11	0	22.22
AV LENGTH	439.00	522.00	0	480.50
STD ERROR	0	0	0	41.50
SAMP SIZE	1	1	0	2
SEXES COMBINED				
PERCENT	66.67	22.22	11.11	100.00
AV LENGTH	492.00	533.50	503.00	502.40
STD ERROR	16.48	11.50	0	12.36
SAMP SIZE	6	2	1	9

¹ Samples acquired by snagging.

Table 8. Mikfik Lake sockeye salmon escapement samples¹ by age, length (mm), and sex, 1976.

	AGE GROUP			
	42	52	53	TOTAL
MALES				
PERCENT	13.63	4.55	4.55	22.73
AV LENGTH	453.70	416.00	469.00	449.20
STD ERROR	23.90	0	0	15.78
SAMP SIZE	3	1	1	5
FEMALES				
PERCENT	45.45	18.18	13.64	77.27
AV LENGTH	461.70	496.50	463.30	470.20
STD ERROR	5.70	9.24	8.21	5.42
SAMP SIZE	10	4	3	17
SEXES COMBINED				
PERCENT	59.09	22.73	18.18	100.00
AV LENGTH	459.80	480.40	464.80	465.40
STD ERROR	6.45	17.62	5.98	5.63
SAMP SIZE	13	5	4	22

¹ Samples acquired by snagging.

Table 9. Mikfik Lake commercial catch of sockeye salmon by age and sex with length (mm), 1980.

ALL PERIODS COMBINED				
	42	AGE GROUP 52	53	TOTAL
MALES				
PERCENT	22.10	17.60	1.50	41.20
AV LENGTH	484.33	526.67	545.00	504.63
STD ERROR	10.51	5.31	0.00	6.07
SAMP SIZE	15	12	1	28
FEMALES				
PERCENT	22.10	33.80	2.90	58.80
AV LENGTH	469.33	502.91	447.50	487.56
STD ERROR	10.50	6.97	2.50	5.62
SAMP SIZE	15	23	2	40
SEXES COMBINED				
PERCENT	44.20	51.40	4.40	100.00
AV LENGTH	476.83	511.05	480.74	494.59
STD ERROR	7.43	4.93	1.67	4.14
SAMP SIZE	30	35	3	68

Table 10. Mikfik Lake commercial catch of sockeye salmon by age and sex with length (mm), 1982.

ALL PERIODS COMBINED				
	42	AGE GROUP 52	63	TOTAL
MALES	990	4,552	1,386	6,928
PERCENT	5.50	25.27	7.69	38.46
AV LENGTH	498.60	519.04	516.57	515.62
STD ERROR	8.45	4.93	11.74	4.18
SAMP SIZE	5	23	7	35
FEMALES	1,979	7,324	1,782	11,085
PERCENT	10.99	40.66	9.89	61.54
AV LENGTH	483.10	513.16	522.00	509.21
STD ERROR	16.70	3.91	4.26	4.01
SAMP SIZE	10	37	9	56
BOTH SEX	2,969	11,876	3,168	18,013
PERCENT	16.48	65.93	17.59	100.00
AV LENGTH	488.27	515.41	519.62	511.68
STD ERROR	11.48	3.06	5.67	2.94
SAMP SIZE	15	60	16	91

Table 11. Nuka Bay commercial catch of sockeye salmon by age with length (mm), 1972.

	AGE GROUP							
	42	52	53	62	63	64	74	TOTAL
SAMPLE SIZE	1	13	17	2	37	2	3	75
PERCENT	1.33	17.33	22.67	2.67	49.33	2.67	4.00	100.00
	NUMBER		PERCENT					
MALES	50		41.67					
FEMALES	70		58.33					
TOTAL	120		100.00					

* Original AWL data forms could not be located to acquire lengths, weights and ages by sex.

Table 12. Nuka Bay commercial catch of sockeye salmon by age and sex with length (mm), 1977.

ALL PERIODS COMBINED										
	AGE GROUP									
	32	41	42	52	53	62	63	64	73	TOTAL
MALES	0	210	419	5,871	524	0	6,185	210	105	13,524
PERCENT	0.00	.65	1.29	18.06	1.61	0.00	19.03	.65	.32	41.61
AV LENGTH	0.00	617.00	482.25	606.43	545.80	0.00	612.59	550.00	603.00	602.31
STD ERROR	0.00	16.00	15.53	3.14	25.63	0.00	2.68	4.00	0.00	2.16
SAMP SIZE	0	2	4	56	5	0	59	2	1	129
FEMALES	105	210	839	9,644	419	105	7,444	105	105	18,976
PERCENT	.32	.65	2.58	29.67	1.29	.32	22.90	.32	.32	58.39
AV LENGTH	350.00	574.00	524.12	587.40	505.00	579.00	586.75	528.00	594.00	580.73
STD ERROR	0.00	12.00	13.65	2.29	12.97	0.00	3.50	0.00	0.00	1.92
SAMP SIZE	1	2	8	92	4	1	71	1	1	181
BOTH SEX	105	420	1,258	15,515	943	105	13,629	315	210	32,500
PERCENT	.32	1.29	3.87	47.74	2.90	.32	41.94	.97	.65	100.00
AV LENGTH	350.00	595.50	510.17	594.60	527.67	579.00	598.48	542.67	598.50	589.71
STD ERROR	0.00	10.00	10.47	1.85	15.36	0.00	2.27	2.67	0.00	1.44
SAMP SIZE	1	4	12	148	9	1	130	3	2	310

Table 13. China Poot Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1980.

ALL PERIODS COMBINED				
	42	AGE GROUP 52	53	TOTAL
MALES	5,620	152	0	5,772
PERCENT	46.83	1.27	0.00	48.10
AV LENGTH	515.16	512.00	0.00	515.08
STD ERROR	4.11	0.00	0.00	4.00
SAMP SIZE	37	1	0	38
AV WEIGHT	2.17	2.20	0.00	2.17
STD ERROR	.06	0.00	0.00	.06
SAMP SIZE	26	1	0	27
FEMALES	5,468	456	304	6,228
PERCENT	45.57	3.80	2.53	51.90
AV LENGTH	510.78	523.00	508.00	511.54
STD ERROR	4.16	24.51	14.00	4.12
SAMP SIZE	36	3	2	41
AV WEIGHT	2.00	2.40	1.95	2.03
STD ERROR	.06	.40	.15	.06
SAMP SIZE	31	2	2	35
BOTH SEX	11,088	608	304	12,000
PERCENT	92.40	5.07	2.53	100.00
AV LENGTH	513.00	520.25	508.00	513.24
STD ERROR	2.92	18.39	14.00	2.88
SAMP SIZE	73	4	2	79
AV WEIGHT	2.09	2.35	1.95	2.10
STD ERROR	.05	.27	.15	.04
SAMP SIZE	57	3	2	62

Table 14. China Poot Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (lb), 1981.

ALL PERIODS COMBINED				
	AGE GROUP			
	42	43	52	TOTAL
MALES	3,394	272	136	3,802
PERCENT	30.65	2.47	1.24	34.56
AV LENGTH	488.88	436.00	540.00	486.93
STD ERROR	12.22	11.00	0.00	10.94
SAMP SIZE	25	2	1	28
AV WEIGHT	4.78	2.50	5.75	4.65
STD ERROR	.14	0.00	0.00	.13
SAMP SIZE	18	1	1	20
FEMALES	6,926	272	0	7,198
PERCENT	62.96	2.47	0.00	65.44
AV LENGTH	490.18	512.00	0.00	491.00
STD ERROR	6.72	22.00	0.00	6.52
SAMP SIZE	51	2	0	53
AV WEIGHT	4.36	0.00	0.00	4.36
STD ERROR	.11	0.00	0.00	.11
SAMP SIZE	24	0	0	24
BOTH SEX	10,320	544	136	11,000
PERCENT	93.82	4.95	1.24	100.00
AV LENGTH	489.75	474.00	540.00	489.59
STD ERROR	6.04	12.30	0.00	5.70
SAMP SIZE	76	4	1	81
AV WEIGHT	4.50	2.50	5.75	4.46
STD ERROR	.09	0.00	0.00	.08
SAMP SIZE	42	1	1	44

The only other sockeye producing system in the Lower Cook Inlet area where returns have been sampled is Bear Lake near Seward. The system was a fair sockeye producer prior to 1964, when compared to other Lower Cook Inlet sockeye systems. However, a policy decision in the 1960's converted the lake into a coho producing system and (except for an accident which destroyed the fish passage control structure and allowed a tremendous return in the late 1960's) only a remnant run exists today. All AWL samples have been taken from this return and are usually presented in the annual Sport Fish Division reports for the Seward area. Sockeye salmon are also present in the Douglas and Kamishak Rivers and Chenik Lake in the Kamishak District, but no sampling was ever conducted prior to 1983.

Chum salmon sampling was very limited prior to 1983. It was always "assumed" that the vast majority of the returns were comprised of 4-year-old fish based on comparisons with known escapements. Strong chum salmon returns occurring 2 years following strong pink salmon returns further suggested that the returns were primarily 4-year-old fish.

Chum salmon samples were taken from Port Dick in 1974, Ursus Cove, and Cottonwood Bays in 1976 and McNeil River in 1977 (Tables 15, 16, 17, and 18). While the majority of the fish were 4-year-old (4_1) adults, significant percentages of 5-year-old (5_1) fish were present in all areas, especially at Port Dick where they comprised 51% of the harvest.

Because of unusually large average weights of chum salmon taken in the Kamishak District in 1982, fish were sampled from the Douglas River and McNeil River catches. Average weights of fish reported on fish tickets ranged between 4.3 and 5.7 kg (9-1/2 and 12-1/2 lb), but no weights were taken during the sampling of the harvests. Five-year-old (5_1) fish comprised between 56 and 64% of the harvests (Tables 19 and 20) and was another indication that an intensive AWL sampling program for sockeye and chum salmon was needed to better assess escapement goals and management practices in the Lower Cook Inlet area.

1983 Sampling

The AWL statistics, including harvest figures for some systems, from the 1983 biological sampling program are presented below by species.

Sockeye Salmon:

Sockeye salmon were sampled from practically all areas in Lower Cook Inlet with particular emphasis put on the China Poot return. Inadequate manpower, logistics problems, and budget constraints prevented sampling set net catches of sockeye salmon in the Southern District as extensively as desired.

The Chenik Lake return was sampled for the first time in recent history. Only two age classes of sockeye were observed with age composition being almost evenly split between 4_2 fish at 48.4% and 5_2 fish at 51.6% (Table 21). The 5_2 return is believed to be from a lake stocking of 257,000 fry from the Crooked Creek hatchery (Kasilof River system) that occurred in 1979. Average lengths for each age class appeared to be very comparable to other sockeye areas of the state. However, visual observations indicated the fish were "long and lean" and average weights were considerably below what is normally observed for these age classes.

Table 15. Port Dick commercial catch of chum salmon by age and sex with length (mm), 1974.

ALL PERIODS COMBINED				
	31	AGE GROUP 41	51	TOTAL
MALES				
PERCENT	5.60	20.40	26.80	52.80
AV LENGTH	570.62	620.69	677.76	644.35
STD ERROR	15.22	6.98	5.01	4.05
SAMP SIZE	8	29	38	75
FEMALES				
PERCENT	1.40	21.80	24.00	47.20
AV LENGTH	560.00	607.10	647.50	626.25
STD ERROR	30.00	7.11	4.67	4.15
SAMP SIZE	2	31	34	67
SEXES COMBINED				
PERCENT	7.00	42.20	50.80	100.00
AV LENGTH	568.50	613.67	663.46	635.80
STD ERROR	13.57	4.99	3.44	2.90
SAMP SIZE	10	60	72	142

Table 16. Cottonwood Bay commercial catch of chum salmon by age and sex with length (mm), 1976.

ALL PERIODS COMBINED				
	31	AGE GROUP 41	51	TOTAL
MALES				
PERCENT	1.30	36.90	11.80	50.00
AV LENGTH	533.00	609.21	656.00	618.27
STD ERROR	0.00	5.99	13.76	5.48
SAMP SIZE	1	28	9	38
FEMALES				
PERCENT	1.30	31.60	17.10	50.00
AV LENGTH	604.00	627.37	635.69	629.61
STD ERROR	0.00	5.38	6.86	4.13
SAMP SIZE	1	24	13	38
SEXES COMBINED				
PERCENT	2.60	68.50	28.90	100.00
AV LENGTH	568.50	617.59	643.98	623.94
STD ERROR	0.00	4.07	6.94	3.43
SAMP SIZE	2	52	22	76

Table 17. Ursus Cove commercial catch of chum salmon by age and sex with length (mm), 1976.

ALL PERIODS COMBINED				
	31	AGE GROUP 41	51	TOTAL
MALES				
PERCENT	17.30	21.40	5.30	44.00
AV LENGTH	546.92	605.31	650.75	587.83
STD ERROR	7.69	5.28	14.90	4.36
SAMP SIZE	13	16	4	33
FEMALES				
PERCENT	12.00	34.70	9.30	56.00
AV LENGTH	566.11	606.08	650.57	604.90
STD ERROR	5.88	6.64	11.90	4.73
SAMP SIZE	9	26	7	42
SEXES COMBINED				
PERCENT	29.30	56.10	14.60	100.00
AV LENGTH	554.78	605.79	650.64	597.39
STD ERROR	5.14	4.58	9.31	3.27
SAMP SIZE	22	42	11	75

Table 18. McNeil River commercial catch of chum salmon by age and sex with length (mm), 1977.

ALL PERIODS COMBINED				
	41	AGE GROUP 51	61	TOTAL
MALES				
PERCENT	50.80	12.70	1.60	65.10
AV LENGTH	666.51	706.87	715.33	675.58
STD ERROR	3.67	10.09	32.78	3.56
SAMP SIZE	96	24	3	123
FEMALES				
PERCENT	24.30	10.10	.50	34.90
AV LENGTH	645.28	683.16	671.00	656.61
STD ERROR	4.10	7.14	0.00	3.52
SAMP SIZE	46	19	1	66
SEXES COMBINED				
PERCENT	75.10	22.80	2.10	100.00
AV LENGTH	659.64	696.37	704.78	668.96
STD ERROR	2.81	6.45	24.58	2.62
SAMP SIZE	142	43	4	189

Table 19. Douglas River commercial catch of chum salmon by age and sex with length (mm), 1982.

ALL PERIODS COMBINED			
	AGE GROUP		
	41	51	TOTAL
MALES	6,956	12,588	19,544
PERCENT	18.75	33.93	52.68
AV LENGTH	612.52	644.39	633.05
STD ERROR	9.34	5.56	4.89
SAMP SIZE	21	38	59
FEMALES	6,294	11,262	17,556
PERCENT	16.96	30.36	47.32
AV LENGTH	604.58	630.35	621.11
STD ERROR	7.94	5.06	4.32
SAMP SIZE	19	34	53
BOTH SEX	13,250	23,850	37,100
PERCENT	35.71	64.29	100.00
AV LENGTH	608.75	637.76	627.40
STD ERROR	6.19	3.78	3.29
SAMP SIZE	40	72	112

Table 20. McNeil River commercial catch of chum salmon by age and sex with length (mm), 1982.

ALL PERIODS COMBINED				
	31	AGE GROUP 41	51	TOTAL
MALES	0	7,523	10,449	17,972
PERCENT	0.00	23.08	32.05	55.13
AV LENGTH	0.00	593.72	657.52	630.81
STD ERROR	0.00	8.12	7.23	5.40
SAMP SIZE	0	18	25	43
FEMALES	418	6,269	7,941	14,628
PERCENT	1.28	19.23	24.36	44.87
AV LENGTH	554.00	613.33	638.89	625.51
STD ERROR	0.00	4.43	5.10	3.36
SAMP SIZE	1	15	19	35
BOTH SEX	418	13,792	18,390	32,600
PERCENT	1.28	42.31	56.41	100.00
AV LENGTH	554.00	602.63	649.48	628.43
STD ERROR	0.00	4.87	4.66	3.34
SAMP SIZE	1	33	44	78

Table 21. Chenik Lake commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED			
	AGE GROUP		
	42	52	TOTAL
MALES	352	634	986
PERCENT	12.57	22.64	35.21
AV LENGTH	533.00	580.61	563.61
STD ERROR	5.17	3.53	2.92
SAMP SIZE	20	36	56
AV WEIGHT	2.05	2.64	2.43
STD ERROR	.06	.05	.04
SAMP SIZE	20	36	56
FEMALES	1,004	810	1,814
PERCENT	35.86	28.93	64.79
AV LENGTH	496.91	548.41	519.91
STD ERROR	2.62	2.56	1.85
SAMP SIZE	57	46	103
AV WEIGHT	1.52	2.05	1.76
STD ERROR	.03	.04	.02
SAMP SIZE	57	46	103
BOTH SEX	1,356	1,444	2,800
PERCENT	48.43	51.57	100.00
AV LENGTH	506.28	562.55	535.30
STD ERROR	2.36	2.11	1.58
SAMP SIZE	77	82	159
AV WEIGHT	1.66	2.31	1.99
STD ERROR	.03	.03	.02
SAMP SIZE	77	82	159

A very limited sample of Douglas River sockeye was obtained. These fish were labeled Douglas River because of the harvest location, but actually fish bound for the Kamishak River system contribute to catches in this area as well. The river systems are primarily large river spawning systems with numerous beaver dams and lack the more traditional lake systems the sockeye salmon usually utilize. As is common with large river systems, a fairly significant percentage (11.2%) of the adult return consisted of age zero (4_1) freshwater fish (Table 22). The majority of the fish were of 5_2 's (83.2%).

Mikfik Lake is another small sockeye system in the Kamishak District located just south of Chenik Lake. The lake usually produces returns totaling under 15,000 fish annually and like the Chenik Lake return, adults returning to this system average a half to 1 kg (1 to 2 lb) lower for a given age class than is normal (Table 23). Unlike Chenik Lake adults, even the average lengths of Mikfik adults are far below normal for any given age class (Tables 8, 9, 10, and 23). Whether this trait is a natural genetic selection over the years or a result of food availability and juvenile growth in the lake is difficult to ascertain.

The year 1983 marked the third major sockeye return to the lake stocking program at Leisure Lake in China Poot Bay. The return continued to be comprised of over 90% 4_2 adult sockeye as occurred in 1980 and 1981 (Tables 13, 14, and 24). However, increased stocking densities in Leisure Lake are resulting in decreased growth in smolt and large numbers of smolt are now holding over in the lake for an additional year. If the project is continued, the returns should contain three to four significant year classes by 1986.

The English Bay and Nuka Bay sockeye returns are more typical of Lower Cook Inlet sockeye (Tables 25 and 26). These two systems are the major producers in the lower inlet and have always contained multiple age classes comprised primarily of larger three-ocean adults (Tables 11 and 12). The high percentage of two-ocean adults in Nuka Bay was expected in 1983 and was not considered unusual.

A limited number of sockeye were sampled from seine catches in Tutka Bay (Table 27). Only two age classes were found and 4_2 adults comprised 47.5% of the samples. Scale patterns of the age 4_2 sockeye salmon samples indicated that over 76% were of Leisure Lake origin. The returning age 4_2 sockeye to Leisure Lake showed extensive freshwater growth compared to the naturally produced age 4_2 sockeye.

Aialik Lake, often referred to as Pederson Lake, was sampled for the first time in 1983 (Table 28). The lake is very small and shallow with little potential for supporting large returns. Over 98% of the returning adult salmon left the lake system as age I smolt and the freshwater growth patterns on the scales was indicative of the low food availability in this system.

Chum Salmon:

Tonsina Creek, located on the west shore of Resurrection Bay, is a potential donor source for chum salmon eggs for a Trail Lakes hatchery enhancement project. The return was sampled for the first time in 1983 to acquire baseline data of the various age classes comprising the return which might be useful in forecasting future returns. The majority of the harvest consisted of 4-year-old fish, but 5-year-olds did comprise a significant percentage of the return (Table 29).

Table 22. Douglas River commercial catch of sockeye salmon by age and sex with length (mm), 1983.

ALL PERIODS COMBINED				
	41	AGE GROUP 42	52	TOTAL
MALES				
PERCENT	5.60	5.60	22.10	33.30
AV LENGTH	559.00	498.00	590.50	569.65
STD ERROR	0.00	0.00	24.02	16.02
SAMP SIZE	1	1	4	6
FEMALES				
PERCENT	5.60	0.00	61.10	66.70
AV LENGTH	556.00	0.00	572.09	570.74
STD ERROR	0.00	0.00	4.85	4.45
SAMP SIZE	1	0	11	12
SEXES COMBINED				
PERCENT	11.20	5.60	83.20	100.00
AV LENGTH	557.50	498.00	576.98	570.38
STD ERROR	0.00	0.00	7.33	6.11
SAMP SIZE	2	1	15	18

Table 23. Mikfik Lake commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED					
	AGE GROUP				
	42	52	53	63	TOTAL
MALES	406	993	316	45	1,760
PERCENT	8.33	20.37	6.48	.92	36.10
AV LENGTH	473.78	518.91	470.57	530.00	500.10
STD ERROR	7.82	3.34	6.19	0.00	2.84
SAMP SIZE	9	22	7	1	39
AV WEIGHT	1.37	1.78	1.29	2.10	1.61
STD ERROR	.09	.05	.06	0.00	.04
SAMP SIZE	9	22	7	1	39
FEMALES	1,220	1,128	722	45	3,115
PERCENT	25.03	23.14	14.81	.92	63.90
AV LENGTH	477.30	516.64	476.31	548.00	492.34
STD ERROR	2.89	5.22	4.84	0.00	2.47
SAMP SIZE	27	25	16	1	69
AV WEIGHT	1.33	1.74	1.29	2.10	1.48
STD ERROR	.03	.05	.05	0.00	.02
SAMP SIZE	27	25	16	1	69
BOTH SEX	1,626	2,121	1,038	90	4,875
PERCENT	33.35	43.51	21.29	1.85	100.00
AV LENGTH	476.42	517.70	474.56	539.00	495.14
STD ERROR	2.92	3.18	3.86	0.00	1.88
SAMP SIZE	36	47	23	2	108
AV WEIGHT	1.34	1.76	1.29	2.10	1.53
STD ERROR	.03	.03	.04	0.00	.02
SAMP SIZE	36	47	23	2	108

Table 24. China Poot Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED						
	32	42	AGE GROUP 52	53	63	TOTAL
MALES	665	32,845	133	266	266	34,175
PERCENT	.90	44.27	.18	.36	.36	46.06
AV LENGTH	422.00	514.13	542.00	507.00	580.00	512.90
STD ERROR	29.61	1.24	0.00	20.00	35.00	1.36
SAMP SIZE	5	247	1	2	2	257
AV WEIGHT	.94	2.14	2.65	2.03	2.95	2.12
STD ERROR	.07	.02	0.00	.13	.55	.02
SAMP SIZE	5	193	1	2	2	203
FEMALES	0	39,360	266	266	133	40,025
PERCENT	0.00	53.05	.36	.36	.18	53.94
AV LENGTH	0.00	513.09	573.50	525.00	569.00	513.76
STD ERROR	0.00	1.09	28.50	10.00	0.00	1.09
SAMP SIZE	0	296	2	2	1	301
AV WEIGHT	0.00	1.98	2.85	2.03	2.70	1.99
STD ERROR	0.00	.02	.55	.18	0.00	.02
SAMP SIZE	0	231	2	2	1	236
BOTH SEX	665	72,205	399	532	399	74,200
PERCENT	.90	97.31	.54	.72	.54	100.00
AV LENGTH	422.00	513.56	563.00	516.00	576.33	513.36
STD ERROR	29.61	.82	19.00	11.18	23.33	.86
SAMP SIZE	5	543	3	4	3	558
AV WEIGHT	.94	2.05	2.78	2.03	2.87	2.05
STD ERROR	.07	.01	.37	.11	.37	.01
SAMP SIZE	5	424	3	4	3	439

Table 25. English Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED							
	AGE GROUP						
	41	42	52	53	63	73	TOTAL
MALES							
PERCENT	0.00	8.60	36.20	2.70	10.00	.30	57.80
AV LENGTH	0.00	516.27	567.93	530.12	578.23	599.00	560.42
STD ERROR	0.00	4.08	1.93	6.12	3.30	0.00	1.50
SAMP SIZE	0	26	109	8	30	1	174
AV WEIGHT	0.00	2.29	2.93	2.20	2.88	0.00	2.79
STD ERROR	0.00	.06	.07	.20	.05	0.00	.04
SAMP SIZE	0	12	32	2	10	0	56
FEMALES							
PERCENT	.30	4.00	28.60	2.00	7.30	0.00	42.20
AV LENGTH	541.00	501.75	544.67	527.00	550.32	0.00	540.72
STD ERROR	0.00	7.42	2.27	5.74	3.74	0.00	1.83
SAMP SIZE	1	12	86	6	22	0	127
AV WEIGHT	2.45	1.79	2.41	2.05	2.45	0.00	2.34
STD ERROR	0.00	.23	.05	.14	.25	0.00	.05
SAMP SIZE	1	4	35	4	3	0	47
SEXES COMBINED							
PERCENT	.30	12.60	64.80	4.70	17.30	.30	100.00
AV LENGTH	541.00	511.66	557.66	528.79	566.45	599.00	552.11
STD ERROR	0.00	3.64	1.47	4.28	2.47	0.00	1.16
SAMP SIZE	1	38	195	14	52	1	301
AV WEIGHT	2.45	2.13	2.70	2.14	2.70	0.00	2.60
STD ERROR	0.00	.07	.04	.11	.07	0.00	.03
SAMP SIZE	1	16	67	6	13	0	103

Table 26. Nuka Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED									
	31	41	42	AGE GROUP				63	TOTAL
				43	52	53	62		
MALES	72	215	2,509	0	3,657	1,649	0	215	8,317
PERCENT	.38	1.13	13.21	0.00	19.25	8.68	0.00	1.13	43.77
AV LENGTH	512.00	546.00	512.14	0.00	576.69	526.35	0.00	589.33	546.21
STD ERROR	0.00	8.39	3.39	0.00	2.92	2.98	0.00	7.53	1.77
SAMP SIZE	1	3	35	0	51	23	0	3	116
AV WEIGHT	2.55	2.87	2.18	0.00	3.14	2.35	0.00	3.37	2.69
STD ERROR	0.00	.49	.05	0.00	.06	.05	0.00	.15	.03
SAMP SIZE	1	3	35	0	51	23	0	3	116
FEMALES	0	215	3,442	72	5,018	1,649	72	215	10,683
PERCENT	0.00	1.13	18.12	.38	26.41	8.68	.38	1.13	56.23
AV LENGTH	0.00	562.00	499.85	340.00	560.34	503.57	592.00	571.67	531.08
STD ERROR	0.00	18.50	3.36	0.00	1.86	4.91	0.00	3.48	1.63
SAMP SIZE	0	3	48	1	70	23	1	3	149
AV WEIGHT	0.00	2.65	1.91	.65	2.74	1.92	2.80	2.62	2.33
STD ERROR	0.00	.34	.04	0.00	.06	.06	0.00	.05	.03
SAMP SIZE	0	3	48	1	70	23	1	3	149
BOTH SEX	72	430	5,951	72	8,675	3,298	72	430	19,000
PERCENT	.38	2.26	31.32	.38	45.66	17.36	.38	2.26	100.00
AV LENGTH	512.00	554.00	505.03	340.00	567.23	514.96	592.00	580.50	537.70
STD ERROR	0.00	10.16	2.41	0.00	1.63	2.87	0.00	4.15	1.20
SAMP SIZE	1	6	83	1	121	46	1	6	265
AV WEIGHT	2.55	2.76	2.02	.65	2.91	2.13	2.80	2.99	2.49
STD ERROR	0.00	.30	.03	0.00	.04	.04	0.00	.08	.02
SAMP SIZE	1	6	83	1	121	46	1	6	265

Table 27. Tutka Bay commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED			
	AGE GROUP		
	42	52	TOTAL
MALES	665	665	1,330
PERCENT	17.50	17.50	35.00
AV LENGTH	505.00	580.71	542.86
STD ERROR	15.85	13.82	10.51
SAMP SIZE	7	7	14
AV WEIGHT	2.03	3.41	2.72
STD ERROR	.22	.25	.17
SAMP SIZE	7	7	14
FEMALES	1,140	1,330	2,470
PERCENT	30.00	35.00	65.00
AV LENGTH	516.67	575.36	548.27
STD ERROR	9.54	5.17	5.21
SAMP SIZE	12	14	26
AV WEIGHT	2.17	3.04	2.64
STD ERROR	.14	.09	.08
SAMP SIZE	12	14	26
BOTH SEX	1,805	1,995	3,800
PERCENT	47.50	52.50	100.00
AV LENGTH	512.37	577.14	546.38
STD ERROR	8.39	5.75	5.00
SAMP SIZE	19	21	40
AV WEIGHT	2.12	3.16	2.67
STD ERROR	.12	.10	.08
SAMP SIZE	19	21	40

Table 28. Aialik Lake commercial catch of sockeye salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED					
	AGE GROUP				
	32	42	52	53	TOTAL
MALES	184	8,201	2,027	369	10,781
PERCENT	.71	31.79	7.86	1.43	41.79
AV LENGTH	355.00	501.89	581.41	533.50	515.42
STD ERROR	25.00	3.56	4.90	7.28	2.90
SAMP SIZE	2	89	22	4	117
AV WEIGHT	0.00	2.31	3.16	2.67	2.49
STD ERROR	0.00	.06	.10	.21	.05
SAMP SIZE	0	38	8	3	49
FEMALES	0	10,965	3,962	92	15,019
PERCENT	0.00	42.50	15.36	.36	58.21
AV LENGTH	0.00	498.83	557.07	530.00	514.38
STD ERROR	0.00	2.27	2.85	0.00	1.82
SAMP SIZE	0	119	43	1	163
AV WEIGHT	0.00	2.03	2.94	2.55	2.27
STD ERROR	0.00	.05	.09	0.00	.04
SAMP SIZE	0	43	14	1	58
BOTH SEX	184	19,166	5,989	461	25,800
PERCENT	.71	74.29	23.21	1.79	100.00
AV LENGTH	355.00	500.14	565.31	532.80	514.82
STD ERROR	25.00	2.00	2.51	5.82	1.61
SAMP SIZE	2	208	65	5	280
AV WEIGHT	0.00	2.15	3.01	2.65	2.36
STD ERROR	0.00	.04	.07	.16	.03
SAMP SIZE	0	81	22	4	107

Table 29. Tonsina Creek commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED				
	31	AGE GROUP 41	51	TOTAL
MALES	62	2,554	1,121	3,737
PERCENT	.87	35.97	15.79	52.63
AV LENGTH	520.00	646.07	661.67	648.66
STD ERROR	0.00	5.29	8.25	4.38
SAMP SIZE	1	41	18	60
AV WEIGHT	2.40	4.90	5.39	5.01
STD ERROR	0.00	.23	.34	.18
SAMP SIZE	1	13	4	18
FEMALES	0	2,117	1,246	3,363
PERCENT	0.00	29.82	17.55	47.37
AV LENGTH	0.00	614.38	628.50	619.61
STD ERROR	0.00	5.05	7.44	4.21
SAMP SIZE	0	34	20	54
AV WEIGHT	0.00	3.72	4.52	4.02
STD ERROR	0.00	.17	.35	.16
SAMP SIZE	0	12	6	18
BOTH SEX	62	4,671	2,367	7,100
PERCENT	.87	65.79	33.34	100.00
AV LENGTH	520.00	631.71	644.21	634.90
STD ERROR	0.00	3.69	5.53	3.05
SAMP SIZE	1	75	38	114
AV WEIGHT	2.40	4.37	4.93	4.54
STD ERROR	0.00	.15	.25	.12
SAMP SIZE	1	25	10	36

Sampling manpower and logistics did not allow for sampling Outer District chum salmon runs at Dogfish Bay and Island Creek in Port Dick. The primary chum salmon producer in recent years has been the Kamishak Bay District and the majority of the chum sampling effort was expended on returns to this area. Chum salmon returns to this district were always felt to be primarily 4-year-old fish. Based on limited samples taken at McNeil River, Cottonwood Bay, and Ursus Cove in 1976 and 1977, 4-year-old fish comprised 56-75% of the returns and 5-year-old fish comprised only 14-29% (Tables 16, 17, and 18). However, average weights of fish harvested in 1982 in the McNeil, Kamishak, and Douglas River areas were much higher than normal. Samples of harvests taken from these areas indicated that 5-year-old chum salmon comprised 56-64% of the return (Tables 19 and 20).

Most of the 1983 fishing effort occurred on strong returns to McNeil and Kamishak Rivers. Samples taken from these two returns indicated 5-year-old fish were 94.3 and 78.7% of the McNeil and Kamishak River returns, respectively (Tables 30 and 31). Although samples for the McNeil River fishery are not presented by period, it was evident from past years that there was probably an age class shift between early and late segments of the return, as evidenced by the decrease in average weights. Very few 4-year-old fish were observed in the early segment of the return, but increased significantly in the late portion.

Chum salmon returns were low in most spawning streams in the northern part of the Kamishak District, except for Iniskin Bay. While the age class composition still indicated 44.8% 5-year-old fish; 4-year-old chums made up the majority of the return (Table 32). All Kamishak District chum salmon samples were combined and are presented in Table 33. Five-year-old fish comprised over 91% of the entire harvest and the average weight of the fish harvested was 4.25 kg or 9.35 lb.

ACKNOWLEDGMENTS

The author would like to thank Al Kingsbury and Dennis Haanpaa for coordinating the student assistant hiring through Amherst College, without which the sampling could not have been accomplished, and Henry Yuen for his patience and tireless assistance in teaching and instructing the author on the use of the Vector Graphics computer and for the use of the AWL data summary program for the Vector. The work was only accomplished because of 80% funding of a student assistant, Margaret Abbott, with federal monies through Amherst College.

Table 30. Kamishak River commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED					
	AGE GROUP				
	31	41	51	61	TOTAL
MALES	145	4,505	18,020	145	22,815
PERCENT	.37	11.61	46.44	.37	58.80
AV LENGTH	493.00	621.42	642.14	642.00	637.10
STD ERROR	0.00	4.38	2.81	0.00	2.38
SAMP SIZE	1	31	124	1	157
AV WEIGHT	1.90	3.76	4.12	3.90	4.03
STD ERROR	0.00	.13	.11	0.00	.09
SAMP SIZE	1	18	49	1	69
FEMALES	0	3,197	12,497	291	15,985
PERCENT	0.00	8.24	32.21	.75	41.20
AV LENGTH	0.00	607.18	626.88	626.00	622.92
STD ERROR	0.00	6.68	2.51	34.00	2.46
SAMP SIZE	0	22	86	2	110
AV WEIGHT	0.00	3.34	3.67	3.80	3.61
STD ERROR	0.00	.17	.08	.80	.08
SAMP SIZE	0	10	33	2	45
BOTH SEX	145	7,702	30,517	436	38,800
PERCENT	.37	19.85	78.65	1.12	100.00
AV LENGTH	493.00	615.51	635.89	631.32	631.26
STD ERROR	0.00	3.77	1.95	22.67	1.73
SAMP SIZE	1	53	210	3	267
AV WEIGHT	1.90	3.59	3.94	3.83	3.86
STD ERROR	0.00	.11	.07	.53	.06
SAMP SIZE	1	28	82	3	114

Table 31. McNeil River commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED				
	41	AGE GROUP 51	61	TOTAL
MALES	1,914	32,964	61	34,939
PERCENT	2.77	47.70	.09	50.56
AV LENGTH	622.44	677.11	707.00	674.17
STD ERROR	7.53	1.58	0.00	1.55
SAMP SIZE	33	554	1	588
AV WEIGHT	4.00	4.86	6.25	4.81
STD ERROR	.27	.08	0.00	.07
SAMP SIZE	8	125	1	134
FEMALES	1,627	32,181	353	34,161
PERCENT	2.35	46.57	.51	49.44
AV LENGTH	610.26	655.97	646.58	653.70
STD ERROR	7.15	1.21	11.35	1.19
SAMP SIZE	28	543	6	577
AV WEIGHT	3.40	4.07	4.02	4.04
STD ERROR	.13	.06	.28	.05
SAMP SIZE	6	140	4	150
BOTH SEX	3,541	65,145	414	69,100
PERCENT	5.12	94.28	.60	100.00
AV LENGTH	616.84	666.67	655.48	664.05
STD ERROR	5.23	1.00	9.73	.98
SAMP SIZE	61	1,097	7	1,165
AV WEIGHT	3.75	4.47	4.35	4.43
STD ERROR	.16	.05	.23	.05
SAMP SIZE	14	265	5	284

Table 32. Iniskin Bay commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED					
	AGE GROUP				
	31	41	51	61	TOTAL
MALES	245	5,484	4,455	49	10,233
PERCENT	1.48	33.24	27.00	.30	62.02
AV LENGTH	549.60	611.97	646.46	620.00	625.53
STD ERROR	28.17	3.33	3.66	0.00	2.48
SAMP SIZE	5	112	91	1	209
AV WEIGHT	2.37	3.97	4.93	3.70	4.35
STD ERROR	.23	.14	.13	0.00	.09
SAMP SIZE	4	31	32	1	68
FEMALES	49	3,280	2,938	0	6,267
PERCENT	.30	19.88	17.81	0.00	37.98
AV LENGTH	505.00	611.58	639.45	0.00	623.81
STD ERROR	0.00	3.43	3.88	0.00	2.56
SAMP SIZE	1	67	60	0	128
AV WEIGHT	1.95	3.60	4.41	0.00	3.97
STD ERROR	0.00	.13	.13	0.00	.09
SAMP SIZE	1	23	21	0	45
BOTH SEX	294	8,764	7,393	49	16,500
PERCENT	1.78	53.12	44.81	.30	100.00
AV LENGTH	542.17	611.82	643.67	620.00	624.88
STD ERROR	23.47	2.45	2.69	0.00	1.82
SAMP SIZE	6	179	151	1	337
AV WEIGHT	2.30	3.83	4.72	3.70	4.20
STD ERROR	.19	.10	.09	0.00	.07
SAMP SIZE	5	54	53	1	113

Table 33. Kamishak District commercial catch of chum salmon by age and sex with length (mm) and weight (kg), 1983.

ALL PERIODS COMBINED				
	41	AGE GROUP 51	61	TOTAL
MALES	6,155	58,697	0	64,852
PERCENT	4.55	43.41	0.00	47.97
AV LENGTH	621.11	665.97	0.00	661.71
STD ERROR	2.67	1.44	26.12	1.28
SAMP SIZE	176	769	3	945
AV WEIGHT	3.89	4.70	0.00	4.62
STD ERROR	.09	.06	.82	.05
SAMP SIZE	57	206	3	263
FEMALES	5,056	64,413	879	70,348
PERCENT	3.74	47.64	.65	52.03
AV LENGTH	610.13	650.38	641.00	647.37
STD ERROR	2.85	1.14	11.86	1.06
SAMP SIZE	117	689	8	814
AV WEIGHT	3.40	3.95	3.95	3.91
STD ERROR	.09	.05	.30	.04
SAMP SIZE	39	194	6	239
BOTH SEX	11,211	123,110	879	135,200
PERCENT	8.29	91.06	.65	100.00
AV LENGTH	616.16	657.81	641.00	654.25
STD ERROR	1.97	.93	11.19	.85
SAMP SIZE	293	1,458	11	1,759
AV WEIGHT	3.67	4.31	3.95	4.25
STD ERROR	.07	.04	.34	.03
SAMP SIZE	96	400	9	502

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